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EXAMINER	
DOAN, DUYEN MY	
ART UNIT	**PAPER NUMBER**
2143	

DATE MAILED: 04/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/997,332	BYRNES, PHILIPPE C.	
	Examiner	Art Unit	
	Duyen M Doan	2143	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 May 2002*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-60* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-60* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 November 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *5/10/2002*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DD

Detail Action

Claims 1-60 are presented for examination.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hatono et al (us pat 5914936) (hereinafter Hatono) and Bearden et al (us pat 6871233) (hereinafter Bearden) further in view of Challenger et al (us pat 626212) (hereinafter Challenger).

As regarding claim 1, Hatono discloses an intermediate device, said intermediate device including memory for storing a traffic intensity surface therein, said intermediate device adapted to monitor traffic intensity by modeling the traffic intensity as a partial differential equation, said intermediate device sampling queue state information in intermediate nodes in said network and from this queue state information estimating the parameters of the partial differential equation model and solving the partial differential equation to produce the traffic intensity surface (col.6, lines 5-67); said intermediate device configured to control traffic intensity by using several actuation mechanisms that include creating routes that minimize transit through congested regions of said network and downloading said routes to intermediate nodes for use in updating their forwarding

tables (col.10, lines 58-67, col.12, lines 33-53, control the traffic restriction function, then update the congested bit). Hatono does not expressly disclose the determining whether to correct bandwidth imbalances in said network either by buying and selling of short term bandwidth or by actuation of said network's topology and resources, including links and/or intermediate node capacities, and downloading said bandwidth actuations to bandwidth managers in the computer communications network. Bearden et al teaches determining whether to correct bandwidth imbalances in said network either by buying and selling of short term bandwidth or by actuation of said network's topology and resources, including links and/or intermediate node capacities, and downloading said bandwidth actuations to bandwidth managers in the computer communications network (col1, line 1 to col.2, lines 1-11, col.6, lines 1-20).

It would have been obvious to one with ordinary skill in the art at the time of the invention was made to combine the teaching of Bearden with the system of Hatono to have the bandwidth manager to determine bandwidth imbalances in the network by either buying or selling short term bandwidth for the purpose of automatic enforcement of the specified QoS goals is realized through the execution of policy logic (see Bearden col.1, lines 44-67).

The combination of Hatono-Bearden does not disclose determining optimal times and locations for content caches to operate in said network and downloading said times and locations to cache content managers in said network, and a set of traffic actuation devices, said devices including intermediate nodes responsible for relaying traffic between links in the computer communications network, including cache content

managers responsible for deciding where to locate content caches in the computer communications network and when to have each content cache active, including bandwidth managers responsible for adding or deleting bandwidth in the computer communications network either temporarily or permanently. Challenger teaches the content cache manager (Fig.1 A).

It would have been obvious to one with ordinary skill in the art at the time of the invention was made to combine the teaching of Challenger with the system of Hatono-Bearden to have the content cache manager for the purpose of reducing the system loading and significantly improving response time (see Challenger col.1, lines 50-57).

As regarding claim 2, Hatono-Bearden-Challenger disclose intermediate device is a computer system (see Hatono col.10, lines 44-67).

As regarding claim 3, Hatono-Bearden-Challenger disclose intermediate device is an automatic traffic and quality of service control computer (see Bearden col.1, lines 44-67).

As regarding claim 4, Hatono-Bearden-Challenger disclose intermediate device collects queue state information from intermediate nodes in the computer communications network that is being managed (see Hatono col.11, lines 41-48).

As regarding claim 5, Hatono-Bearden-Challenger disclose intermediate device estimates the parameters of the partial differential equation that describes the traffic intensity dynamics of the discrete event system (see Hatono col.6, lines 5-67).

As regarding claim 6, Hatono-Bearden-Challenger disclose intermediate device solves the partial differential equation that describes the traffic intensity dynamics of the

computer communication network to yield the traffic intensity surface for the discrete event system (see Hatono col.6, lines 5-67).

As regarding claim 7, Hatono-Bearden-Challenger disclose intermediate device generates optimal and suboptimal paths that are geodesics and non-geodesics, respectively, of the traffic intensity surface (see Hatono col.10, lines 58-67, col.12, lines 1-53).

As regarding claim 8, Hatono-Bearden-Challenger disclose intermediate device generates optimal and suboptimal routes by projecting the optimal and suboptimal paths on to the topology of the computer communications network (see Hatono col.10, lines 58-67, col.12, lines 1-53).

As regarding claim 9, Hatono-Bearden-Challenger disclose intermediate device actuates the traffic intensity by sending the optimal routes to intermediate nodes for the purpose of updating their forwarding tables (see Hatono col.10, lines 58-67, col.12, lines 1-53).

As regarding claim 10, Hatono-Bearden-Challenger disclose intermediate device determines the optimal times and locations for content caches to operate (see Challenger col.3, lines 1-56).

As regarding claim 11, Hatono-Bearden-Challenger disclose intermediate device actuates the traffic intensity by downloading the optimal times and locations for content caches to operate to cache content managers in the computer communications network (see Challenger col.3, lines 1-56).

As regarding claim 12, Hatono-Bearden-Challenger disclose intermediate device determines the times and locations of bandwidth imbalances in the computer communications network and their persistence (see col.1, lines 44-67 to col.2, lines 1-17, col.6, lines 1-20).

As regarding claim 13, Hatono-Bearden-Challenger disclose intermediate device actuates the traffic intensity by downloading the times and locations of the bandwidth imbalances to a bandwidth manager in the computer communications network (see Bearden col.1, lines 44-67 to col.2, lines 1-17, col.6, lines 1-20).

As regarding claim 14, the limitations are similar to claim 1, therefore rejected for the same rationale as claim 1.

As regarding claim 15, the limitations are similar to claim 2, therefore rejected for the same rationale as claim 2.

As regarding claim 16, the limitations are similar to claim 3, therefore rejected for the same rationale as claim 3.

As regarding claim 17, Hatono-Bearden-Challenger disclose monitoring and controlling causes the quality of service and availability variables for the discrete event system to improve (see Bearden col.1, lines 43-67, col.2, lines 1-17).

As regarding claim 18, claim 18 cites the limitations of claims 4-13. Therefore claim 18 is rejected for the same rationales as claims 4-13.

As regarding claim 19, Hatono-Bearden-Challenger disclose collecting said queue state information and storing them in memory of a computer system (see Hatono col.10, lines 49-67, col.11, lines 1-67).

As regarding claim 20, Hatono-Bearden-Challenger disclose collecting said queue state information and storing them in memory of an automatic traffic and quality of service control computer (see Hatono col.10, lines 49-67, col.11, lines 1-67).

As regarding claim 21, Hatono-Bearden-Challenger disclose estimating the parameters of the partial differential equation that describes the traffic intensity dynamics of the discrete event system and storing them in memory of a computer system (see Hatono col.6, lines 5-67).

As regarding claim 22, Hatono-Bearden-Challenger disclose estimating the parameters of the partial differential equation that describes the traffic intensity dynamics of the discrete event system and storing them in memory of an automatic traffic and quality of service control computer (see Hatono col.6, lines 5-67).

As regarding claim 23, Hatono-Bearden-Challenger disclose solving the partial differential equation that describes the traffic intensity dynamics of the computer communication network to yield the traffic intensity surface for the discrete event system and storing this in memory of a computer system (see Hatono col.6, lines 5-67).

As regarding claim 24, Hatono-Bearden-Challenger disclose solving the partial differential equation that describes the traffic intensity dynamics of the computer communication network to yield the traffic intensity surface for the discrete event system and storing this in memory of an automatic traffic and quality of service control computer (see Hatono col.6, lines 5-67).

As regarding claim 25, Hatono-Bearden-Challenger disclose generating optimal and suboptimal paths that are geodesics and non-geodesics, respectively, of the traffic

intensity surface and storing these in memory of a computer system (see Hatono col.10, lines 58-67, col.12, lines 1-53).

As regarding claim 26, Hatono-Bearden-Challenger disclose generating optimal and suboptimal paths that are geodesics and non-geodesics, respectively, of the traffic intensity surface and storing these in memory of an automatic traffic and quality of service control computer (see Hatono col.10, lines 58-67, col.12, lines 1-53).

As regarding claim 27, Hatono-Bearden-Challenger disclose generating optimal and suboptimal routes by projecting the optimal and suboptimal paths on to the topology of the computer communications network and storing these in memory of a computer system (see Hatono col.10, lines 58-67, col.12, lines 1-53).

As regarding claim 28, Hatono-Bearden-Challenger disclose generating optimal and suboptimal routes by projecting the optimal and suboptimal paths on to the topology of the computer communications network and storing these in memory of an automatic traffic and quality of service control computer (see Hatono col.10, lines 58-67, col.12, lines 1-53).

As regarding claim 29, Hatono-Bearden-Challenger disclose actuating the traffic intensity by downloading the optimal routes to intermediate nodes for the purpose of updating their forwarding tables, wherein said updating of their forwarding tables causes the intermediate nodes to improve the computer communications network's quality of service and availability by routing traffic around congestion and regions of high utilization in the computer communication network (see Hatono col.10, lines 58-67, col.12, lines 1-53, col.14, lines 1-67).

As regarding claim 30, Hatono-Bearden-Challenger disclose actuating the traffic intensity by downloading the optimal routes to intermediate nodes for the purpose of updating their forwarding tables, wherein said updating of their forwarding tables causes the intermediate nodes to improve the computer communications network's quality of service and availability by routing traffic over a large percentage of available links in the computer communication network (see Hatono col.10, lines 58-67, col.12, lines 1-53, col.14, lines 1-67).

As regarding claim 31, Hatono-Bearden-Challenger disclose determining the optimal times and locations for content caches to operate and storing these in memory of a computer system (see Challenger col.3, lines 1-56).

As regarding claim 32, Hatono-Bearden-Challenger disclose determining the optimal times and locations for content caches to operate and storing these in memory of an automatic traffic and quality of service control computer (see Challenger col.3, lines 1-56).

As regarding claim 33, Hatono-Bearden-Challenger disclose actuating the traffic intensity by downloading the optimal times and locations for content caches to operate to cache content managers in the computer communications network, wherein said optimal cache times and locations causes the cache content managers to improve the computer communications network's quality of service and availability by avoiding congested regions of the computer communications network, and to specify the optimal times when requests should be redirected to given cache locations (see Challenger col.3, lines 1-56).

As regarding claim 34, Hatono-Bearden-Challenger disclose determining the times and locations of bandwidth imbalances in the computer communications network and their persistence and storing these in memory of a computer system (see Bearden col.1, lines 44-67 to col.2, lines 1-17, col.6, lines 1-20).

As regarding claim 35, Hatono-Bearden-Challenger disclose determining the times and locations of bandwidth imbalances in the computer communications network and their persistence and storing these in memory of an automatic traffic and quality of service control computer (see Bearden col.1, lines 44-67 to col.2, lines 1-17, col.6, lines 1-20).

As regarding claim 36, Hatono-Bearden-Challenger disclose actuating the traffic intensity by downloading the times and locations of the bandwidth imbalances to bandwidth managers in the computer communications network, wherein said times and locations cause the bandwidth managers to improve the computer communications network's quality of service and availability by correcting bandwidth imbalances in the computer communications network either by buying and selling of short term bandwidth or by actuation of said network's topology and resources, including links and/or intermediate node capacities (see Bearden col.1, lines 44-67 to col.2, lines 1-17, col.6, lines 1-20).

As regarding claims 37-54, the limitations are similar to claims 18-36 respectively, therefore claims 37-54 are rejected for the same rationale as claims 18-36.

As regarding claims 55, the limitations are similar to claim 1 therefore rejected for the same rationale as claim 1.

As regarding claim 56, Hatono-Bearden-Challenger disclose traffic control includes generating paths that route traffic around congestion and regions of high utilization (see Hatono col.10, lines 58-67, col.12, lines 1-53, col.14, lines 1-67).

As regarding claim 57, Hatono-Bearden-Challenger disclose generate the optimal locations at which caches of replicated data may be located to avoid congested regions of the network and to specify the optimal times when requests should be redirected to given cache locations (see Hatono col.10, lines 58-67, col.12, lines 1-53, col.14, lines 1-67).

As regarding claim 58, Hatono-Bearden-Challenger disclose traffic control includes generating paths that route traffic over a larger percentage of available links (see Hatono col.10, lines 58-67, col.12, lines 1-53, col.14, lines 1-67).

As regarding claim 59, Hatono-Bearden-Challenger disclose processor is configured to provide traffic intensity and utilization state information to capacity planning tools that seek to adjust traffic and bandwidth (see Bearden col.1, lines 44-67 to col.2, lines 1-17, col.6, lines 1-20).

As regarding claim 60, Hatono-Bearden-Challenger disclose configured to determine when certain links and/or intermediate nodes of the network have surplus bandwidth or a bandwidth deficit and the level of persistence of such bandwidth imbalances and when such imbalances should be actuated using either a bandwidth trading tool which will remedy or purchase bandwidth to actuate bandwidth deficits and/or make available surplus capacity for resale to third party traffic, or when such

imbalances should be actuated by actuating the network's topology and/or bandwidth (see Bearden col.1, lines 44-67 to col.2, lines 1-17, col.6, lines 1-20).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Duyen M. Doan whose telephone number is (571) 272-4226. The examiner can normally be reached on 9:30am-6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David A. Wiley can be reached on (571) 272-3923. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Examiner
Duyen Doan
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